

MICRO MAGNETIC NON-LATCHING SWITCHES AND METHODS OF  
MAKING SAME

ABSTRACT OF THE DISCLOSURE

A micro magnetic switch includes a reference plane and a magnet located proximate to a supporting structure. The magnet produces a first magnetic field with uniformly spaced field lines approximately orthogonal to the reference plane, symmetrically spaced about a central axis, or non-uniformly spaced fields approximately orthogonal to the reference plane. The switch also includes a cantilever supported by the support structure. The cantilever has an axis of rotation lying in the reference plane and has magnetic material that makes the cantilever sensitive to the first magnetic field, such that the cantilever is configured to rotate about the axis of rotation between first and second states. The switch further includes a conductor located proximate to the supporting structure and the cantilever. The conductor is configured to conduct a current. The current produces a second magnetic field having a component approximately parallel to the reference plane and approximately perpendicular to the rotational axis of the cantilever, which causes the cantilever to switch between the first and second states. The switch still further includes a stopping device located proximate to the supporting structure. The stopping device is operable to stop the cantilever from rotating about the axis of symmetry beyond a point at which a longitudinal axis of the cantilever is approximately parallel to a longitudinal axis of the magnet.

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